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ABSTRACT

Jargon, when used properly, defines precisely and concisely the concepts peculiar to a profession. Within a profession, it meets the criteria for clear, brief, specific communication. When used outside that profession, however, it tries to impress rather than to express. Engineers and other professionals need to be taught when--and when not--to use jargon. Engineering students must be made aware that their products will be information, not aircraft, spaceships, engines, or suspension bridges. Engineering students can be taught to communicate technical ideas effectively through a joint course coordinated between the English and the various technical departments. This course could include participation by specially trained technical communication specialists from the English department working with the technical instructors. Course content should be tailored not to the technical student in the classroom, but to the ultimate user of the information developed by the technologist. Such a definition expands the criteria to include effective communication with businesspersons, lay groups, media, politicians, and citizens' groups. The basic objective should be technical communication--a job not finished until the student has communicated accurately with the reader or listener. (HOD)

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TECHNICAL SNOBBERY VERSUS CLEAR COMMUNICATING

By

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It has been 27 years since my last college English course at Texas A&M. Completion of that course was one of the happiest events of my college career. No more grammar. No more literature. No more book reports, compositions, or 500-word themes. I could concentrate on the important courses: mathematics, aerodynamics, aircraft structures, wind tunnel testing, aircraft performance, stability and control. My fellow aeronautical engineering classmates shared these feelings. True, we still had to write one or two technical reports each semester, but they were graded solely on technical content, not grammar. They did not have to be literate.

In 1953 we believed aeronautical engineering to be the pinnacle of technological sophistication. We looked down our noses at mere civil and mechanical engineering students. The Economics, History, and English departments would have been beneath our notice altogether had they not distracted us from our quest for more important knowledge. We reveled in our jargon and impressed lesser mortals with such words as "pressure coefficient" and "dynamic lateral-directional instability." That means "Dutch roll", we explained. We were careful not to explain things too simply, however, because then others would understand too, and wouldn't realize how smart we were. Nicholas Vansberg explains[1]:

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"Any ambitious scientist must, in self-protection, prevent his collegues from discovering that his ideas are simple . . . so if he can write his publications obscurely and uninterestingly enough, no one will attempt to read them but all will instead genuflect in awe before such erudition."

The snobbery continued after graduation. We were disdainful of non-technical support people in industry, especially technical publications people. How dare they suggest changes to our reports. We were the experts.We resented their gall and protested that their suggested changes compromised the subtle meanings of our torturous grammer.

Over the years, however, my career has changed. I am no longer personally involved with engineering duties, but solely concerned with communicating the technical ideas of engineering specialists to management, non-technical people, politicians, media, and lay audiences. Now that my job is technical communicating, I recognize it when this technical snobbery is directed against me: just deserts, no doubt.

Others recognize the effects of misunderstandings which may arise when technical ideas are not communicated clearly. While aerospace engineers were patting themselves on the back at their seminars on the grand technological triumph of the U.S. supersonic transport, a medical doctor in Arizona announced that the SST would cause skin cancer. The technologists had yet to learn that the Washington Post, the Los Angeles Times, and the Dallas Morning News do not sell news; they sell newspapers. The skin cancer headline sold more newspapers than the engineers' boring equations and the SST was killed; not because it would cause skin cancer -- which, as it turned out, it would not -- but because a misinformed public feared that it would cause skin cancer.

John McGrath of McDonnell Douglas Corporation, builders of military fighter aircraft and commercial airliners for most of the free world, said[2]:

> "Sound engineering depends on straight thinking and plain talk. That does not mean things will be simple. It does mean the less than simple especially demands clear exposition. To lead society, this field needs every engineer writing simply and directly, as our founding fathers did."

William H. Gregory, Editor-in-Chief of Aviation Week & Space Technology magazine, the weekly "bible" of the aerospace industry, commented on the forced retraction of one of U.S. Senator William Proxmire's (D-Wis.) notorious Golden Fleece awards (Senator Proxmire awards "Golden Fleeces" to government organizations and individuals in order to call attention to expenditures which he believes "fleece" the taxpayer for unworthy projects). This time, however, he was forced to retract the award when the recipients, the National Science Foundation, the National Aeronautics and Space Administration, and the Office of Naval Research finally explained clearly the nature of their joint study. Mr. Gregory wrote in his editorial[3]:

> "The scientific community has brought part of its Golden Fleece trouble on itself by its incomprehensible jargonistic titles and (the) esoteric subjects of some of its research programs."

Robert Gunning, who gave Clear Writing Clinics for hundreds of corporations, said[4]:

> "Business writing is more complex than that in the Atlantic (Monthly Magazine), not because it has to be, but because it is heavy with fog, which tires and confuses the reader without telling him anything. Good writing, on the other hand, is free from this useless complexity."

Engineering is not the only profession guilty of communication depression, verbal inflation and jargonitis. Every profession has its own unique terms. Edwin Newman, NBC newscaster and staunch defender of correct English usage, asks[5]:

> "Why is such language used? Self-importance, of course, but also because it serves as a fence that keeps others outside and respectful, or leads them to ignore what is going on inside because it is too much trouble to find out. For those inside, either effect is harmful. That is why psychologists will not speak of someone as independent or self-reliant. They will say that that person has a high personal autonomy quotient. A librarian won't say that he offers many services but multifaceted services. The Chief of Police in Madison, Wisconsin, spoke of the jail as a total incarceration facility . . ."

Jargon is not always bad: Used properly, it defines precisely and concisely the concepts peculiar to a profession. Within a profession, it meets the criteria for clear, brief, specific communication. When used outside that profession, however, it tries to impress rather than to express, but it only repulses. The point is that engineers and other profesionals need to be taught when to use jargon, and when not to.

Even while people criticize others, they commit the same sins: Nicholas Vansberg used the words "genuflect" and "erudition"; John McGrath used "exposition"; and William Gregory used "esoteric." These words, familiar to any English professor or writer, are as uncomprehensible to most engineers as their own "unsymmetrical dimethyl hydrazine" is to you.

Another problem is acronymania, for which the U.S. Government must surely win the prize unanimously. And acronymania is highly infectious. An aerospace company office memo reported[6]:

"Inquiries to CNAP staffers to determine rationale for award of AFC-604 in RF-8G to NARF NORIS vice VSC have received a vague response."

I don't doubt that for an instant!

On the other hand, if we said "self-contained underwater breathing apparatus" each time we wanted to scuba, we might not have time left to do so. Scuba, like radar, laser and snafu, is so widely known that its original definition has long been forgotten.

Clearly, there is a time, a place, and a use for complex terms, acronyms, and jargon. The student must learn where such usage is appropriate, as well as how to express himself clearly and correctly, both when using these terms and also without using them.

As a student, and for many years after graduation, I did not know how to express my technical ideas without using these terms. In fact, the thought never even occurred to me that I should try. All of my associates were engineers; they understood because they thought and talked and wrote just as I did. My basic problem, I now realize, was that I did not understand the actual product of an aeronautical engineer. I was full of bright-eyed wonder over the mystique of aeronautical technology, and never doubted that my product would be aircraft.

In 24 years of work in industry, government and academia, I have given 42 talks, speeches and formal briefings, not including course lectures, and published 54 papers, articles, test plans, and reports, totaling over 2500 pages. Additionally, I have participated in innumerable meetings, informal briefings, discussions and arguments, but I have not cut one piece of metal for an aircraft. I have not installed a single actuator, control surface or indicator. My product is not "aircraft"and never has been. My product is "information."

And I know of only four things that can be done with information; it can be used by its creator, stored, shared, or forgotten.

Few companies will long pay an employee to create information and keep it to himself. Even if the employee uses the information himself, sooner or later he must communicate it to someone or write it down. He must "sell" his ideas to his boss in order to get money, equipment, facilities, people, or time to explore or develop those ideas. There are enormous predatory forces in every organization continually preying on every project -- seeking its money, equipment, facilities, people and time. The employee must continually defend his project and ideas by effectively communicating with his management. The frequency and extent of these oral and written communications depend upon the employee's particular responsibilities, and their success depends solely upon his communicating skill.

Dr. Pearsall reported[7] the results of a survey[8] of some people listed in "Engineers of Distinction." Respondents spent an average of 24% of their time writing plus 31% of their time working with other peoples' written materials; less than half of their time was spent actually "doing" the engineering "things" they were trained to do.

The engineering student must be made aware that his product will be <u>information</u>; not aircraft, or spaceships, or engines, or suspension bridges, or automobiles, or nuclear power plants, or computers. If he fails to grasp this fact, his career development and his value to an employer and to society will be limited.

Many people fail to identify their product correctly and suffer the consequences. Theodore Levitt, in the Harvard Business Review[9]

argues that every major industry was once a growth industry. In every case where growth was threatened, slowed, or stopped it was not because the market was saturated, but because management failed to define the company's product correctly. He writes:

> "The railroads did not stop growing because the need (to transport) passengers and freight declined. That grew. The railroads are in trouble today not because the need was filled by others...but because it was not filled by the railroads themselves. They let others take customers away from them because they assumed themselves to be in the railroad business, rather than in the transportation business. The reason they defined their industry wrong was because they were railroad-oriented instead of transportation-oriented; they were product-oriented instead of customer-oriented."

Mr. Levitt identifies other erroneous product definitions; Hollywood thought it was in the movie business when it was actually in the entertainment business, and many studios were decimated by television.

Years ago I defined my anticipated product wrong because I thought I was in the aircraft business instead of in the technical information business. I was not prepared for the technical information business because my Engineering professors also thought they were in the aircraft business, and my English professors thought they were in the literature and rhetoric business. Consequently, both departments failed to teach me how to communicate complex technical information clearly. And their omission was all the more insidious because I did not recognize it as a failure until more than five years after graduation.

How could I have been better prepared for my future business of developing and communicating technical aeronautical information? One

way would have been to learn on my own. Plenty of self-help is available. For example, John Walter suggests[10] a self-help program to prepare literature-trained English teachers to teach technical writing. He suggests:

> "...self-help, primarily through reading; attendance at professional society meetings devoted to technical writing; attendance at seminars, symposia, and institutes devoted to the teaching of technical writing; internships; and, if possible, the taking of graduate course work in teaching technical writing."

This would be beneficial but self-help has two basic problems: First, there is the danger of "preaching to the choir" and, second, there is a complete vacuum of feedback on student development.

If not through self-help, then how might my Aeronautical Engineering and English departments have taught me to communicate technical ideas effectively? Individually, neither was capable of the task. Engineering students who are not taught to communicate effectively sometimes grow up to be Engineering professors who cannot communicate effectively or teach their students to communicate effectively. English professors understand composition and communication, but cannot practicably include the necessary realism of complex technical content in their technical communicating courses. Any attempt to do so would generate a roar of thundering resentment from the technical students. If neither department is individually capable, then what is the alternative?

I suggest a joint program coordinated between English and technical departments. Perhaps one freshman English course to cover the basics of clear written and oral communicating, and the emphasis which effective communicating will receive in subsequent technical courses.

These technical courses could include participation by specially trained technical communication specialists from the English Department. These communication specialists, working harmoniously with the technical instructors, would be responsible for helping the students to develop good oral and written communications skills. Up to one letter grade would be subtracted from a technical course presentation, report, or paper for grossly inferior communicating. Appropriate corrections and constructive criticisms would be made for all oral and written technical work. The student might rebel at having two instructors for each technical course. Actually, this would increase the subject realism, and it would not be the last time the student will have more than one boss to please.

Constant emphasis is essential for development of correct and effective communication skills. It takes more than a single three-hour course to supplant a lifetime of playground jargon and television trivialogues.

James Souther has made an excellent start on technical communication course content[11], but the program needs more customer definition and emphasis. We must identify our customer correctly in order to identify our product correctly.

The first impulse is to identify the student as the customer -- he has in essence hired the instructor to teach him the course material and evaluate his progress.

I suggest, however, that the real customer, to whom we should tailor our product, is not the technical student in our classroom, but the ultimate user of the information developed by the technologist. Such a customer definition frighteningly expands the criteria to include effective communication with businessmen, lay groups, media, politicians, and hostile citizens' groups. In fact, the very people upon whom the technologist is ultimately dependent for tolerance, support, acceptance, and funding of his projects.

I suggest also that we define our proposed product to be "technical communicating". If our objective is "technical writing", then once we have written, our job is done. If our objective is "technical speaking", then once we have spoken, our job is done. But, if our objective is "technical communicating", then our job is not finished until we have communicated accurately with our readers or listeners. If they do not understand our points from our point of view, then we have failed to communicate.

This conference cannot possibly solve the problem, but it could define the criteria for the solution. Therefore, I propose we agree that:

- Our customer be defined as the ultimate user of technical information, whoever that might be;
- Our product be defined as the clear, concise communicating of technical information to that customer, and that
- We endorse close cooperation between college and university English and technical departments.

This would be a small step for this conference, and a giant leap for technical communicating.

And, speaking of giant leaps, former astronaut, Senator Harrison H. Schmitt (R-N.M.), in a briefing to the Institute of Electrical and Electronic Engineers on his plan for a new U.S. space policy, said[12]:

> "What does it take for Americans to do great things: to go to the moon, to win wars, to dig canals between oceans, to build a railroad across a continent? In independent thought about this question, Neil Armstrong and I concluded that it takes a coincidence of four conditions, or, in Neil's view, the simultaneous peaking of four of the many cycles of American life.

First, a base of technology must exist from which the thing to be done can be done.

Second, a period of national uneasiness about America's place in the scheme of human activities must exist.

Third, some catalytic event must occur that focuses the national attention on the direction to proceed.

Finally, an articulate and wise leader must sense these first three conditions and put forth with words and action the great thing to be accomplished..."

Surely, we have the ability to improve the quality of our technologists' communicating. Surely there is a widespread uneasiness about the present state of technical communicating. Surely, no one could doubt the catalytic value of the misinformation rampant about nuclear power plants and the energy crisis.

If only we had a wise and articulate leader...

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